CLAIMS

1. C1 inhibitor which is characterised in that its plasma circulatory half-life has been changed by modification of an O-linked carbohydrate.

2. C1 inhibitor according to claim 1 which is characterised in that its plasma circulatory half-life has been extended compared to the half-life of unmodified C1 inhibitor.

3. C1 inhibitor according to claim 1 which is characterised in that its plasma circulatory half-life has been reduced compared to the half-life of unmodified C1 inhibitor.

4. C1 inhibitor according to claims 1-3, which is characterised in that the plasma circulatory half-life of the modified inhibitor has decreased with or increased to at least 1.5, 2, 3 or 4 times the value of the half-life of the unmodified inhibitor.

5. C1 inhibitor according to claims 1-4, which is characterised in that the modification comprises sialylation of the O-linked carbohydrate or the removal of one or more non-sialylated O-linked carbohydrates.

6. C1 inhibitor according to claim 5, which is characterised in that the non-sialylated O-linked carbohydrate is galactose or Gal(•1-3)GalNAc.

7. C1 inhibitor according to claims 1-6, which is characterised in that the O-linked carbohydrate is modified by incubation with an enzyme preparation which comprises one or more enzymes.

8. C1 inhibitor according to claim 7, which is characterised in that the enzyme preparation comprises one or more sialyltransferases, galactosidases or endo-acetyl-galactosaminidases.

9. C1 inhibitor according to claim 8 which is characterised in that the enzyme preparation comprises sialyltransferases ST3Gal III and ST3Gal I. or endo-α-N-acetyl-galactosaminidase.

10. C1 inhibitor according to claims 1-9, which is characterised in that the modification is an *in vitro* modification.

11. C1 inhibitor according to claims 1-10, which is characterised in that the C1 inhibitor is human C1 inhibitor.

12. C1 inhibitor according to claims 1-11 which is characterised in that the C1 inhibitor is recombinantly produced.

13. A pharmaceutical composition comprising C1 inhibitor according to claims 1-12.

14. Use of C1 inhibitor according to claims 1-12 for the manufacture of a medicament for administration to the blood circulatory system.

15. Use according to claim 14, wherein the blood circulatory system is the human or animal blood circulatory system.

16. A method for extending the blood circulatory half-life of a glycoprotein or of a glycoprotein comprising compound, wherein the method comprises the removal of one or more non-sialylated O-linked carbohydrates from the glycoprotein.

17. The method according to claim 16 wherein the non-sialylated carbohydrate is galactose or Gal(β1-3)GalNAc.

18. The method according to claim 16 or 17 wherein the removal of the carbohydrates is done by *in vitro* incubation with an enzyme preparation comprising one or more enzymes.

19. The method according to claim 18, wherein the enzyme preparation comprises galactosidase or endo-acetylgalactosaminidase.

20. The method according to claim 18 or 19 wherein the enzyme preparation comprises one or more recombinantly produced enzymes.

21. The method according to claim 16 or 17, wherein the removal of the carbohydrates is done *in vivo* by expression of a nucleic acid encoding a galactosidase or an endo-acetylgalactosaminidase.

22. The method according to any one of claims 16-21, wherein the glycoprotein is C1 inhibitor.